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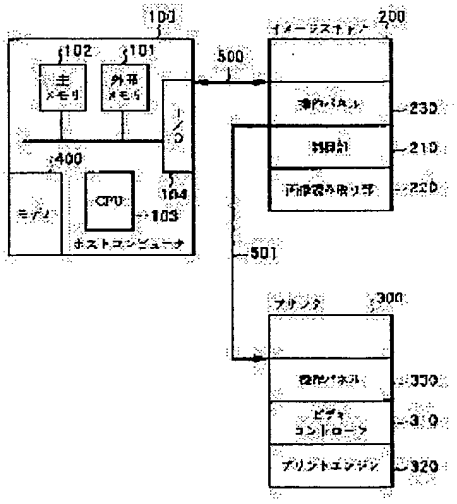
(54) IMAGE INPUT/OUTPUT SYSTEM, IMAGE READER AND ITS CONTROL METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an image input output system having each function of copying, facsimile transfer and printing or the like, the image reader and its control method for the user at a low cost by realizing the image input output system having each function of copying, facsimile transfer and printing or the like through the combination of a host device, an image reader and a printer.

SOLUTION: In the case that a host device 100, an image scanner 200, and a printer 300 and they are in operation as print system components, the image scanner 200 transfers data from the host device 100 to the printer 300. In the case of operating the system as a copying machine, an image read by the image scanner 200 is printed out by the printer 300. In the operating the system as a facsimile equipment, the image read from the image scanner 200 is sent to the host device 100, from which the image is sent to a telephone network via a MODEM 400 at transmission and received data are printed out in the same gist as that with the case with the operation of the print system at reception.



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CLAIMS

[Claim(s)]
[Claim 1] The image input/output system characterized by to function as the printing system which carries out the printout of the data from said host equipment with said airline printer, the copy system which carry out the printout of the image data read with said image reader with said airline printer, and each system of the facsimile system which transmits through the means of communications in which said host equipment has the image read with said image reader by having host equipment, an image reader, and an airline printer, and combining each of said equipment suitably.
[Claim 2] It is the image input/output system according to claim 1 which said image reader has a conversion means to change the read image data into a Page Description Language, sends out the data changed into the Page Description Language by this conversion means to said airline printer, and is characterized by said airline printer having an interpretation means to interpret a Page Description Language and to generate image data.
[Claim 3] Said printing means is image input/output system according to claim 1 characterized by receiving as it is and carrying out the printout of the image data.
[Claim 4] Said image reader is image input/output system according to claim 1 or 2 characterized by having a character recognition means to recognize an alphabetic character from the read image.
[Claim 5] An image reading means to be the image reader connected to host equipment and an airline printer, and to read an image, When setting out by setting-out means to set up the function which should be carried out, and said setting-out means is the 1st setting out Transmit the data received from said host equipment to said airline printer, and in being the 2nd setting out The image reader characterized by having the control means which transmits the image read with said image reading means to said airline printer, and transmits the image read with said image reading means to said host equipment in being the 3rd setting out.
[Claim 6] The image reader according to claim 5 characterized by having further a conversion means to change into a Page Description Language the image read with said image reading means.
[Claim 7] The image reader according to claim 5 or 6 characterized by having further a character recognition means to recognize an alphabetic character, from the image read with said image reading means.
[Claim 8] Said setting-out means is an image reader according to claim 5 characterized by receiving setting out of the function which should be carried out from said host equipment.
[Claim 9] The image reading process of being the control approach of the image reader connected to host equipment and an airline printer, and reading an image, When setting out by the setting-out process which sets up the function which should be carried out, and said setting-out process is the 1st setting out Transmit the data received from said host equipment to said airline printer, and in being the 2nd setting out The control approach of the image reader characterized by having the control process which transmits the image read according to said image reading process to said airline printer, and transmits the image read according to said image reading process to said host equipment in being the 3rd setting out.

[Claim 10] The control approach of the image reader according to claim 9 characterized by having further the conversion process which changes into a Page Description Language the image read according to said image reading process.
[Claim 11] The control approach of the image reader according to claim 9 or 10 characterized by having further the character recognition process which recognizes an alphabetic character from the image read according to said image reading process.
[Claim 12] Said setting-out process is the control approach of the image reader according to claim 9 characterized by receiving setting out of the function which should be carried out from said host equipment.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention is the combination of airline printers, such as image readers, such as host equipments, such as a host computer which has communication facility, and an image scanner, and a printer, and relates to the image input/output system and the image reader which realize many functions covering I/O of images, such as a printing system, a copy system, and a facsimile system, at large, and its control approach.
[0002]
[Description of the Prior Art] When a document etc. was copied conventionally, a copying machine, a document, etc. were transmitted and received through the telephone line and facsimile apparatus, a document, etc. were printed, according to the function, the separate hardware configuration was taken like the printing system which connected the printer with the host computer.
[0003]
[Problem(s) to be Solved by the Invention] However, in the former, in spite of having used the same equipment as the image input section and the image output section of a copying machine, facsimile apparatus, and a printing system, since each function was realized by separate hardware, the user had to purchase separate hardware, although each function is used, and had the problem of becoming a cost rise.
[0004] This invention was made in order to solve the above-mentioned trouble, it realizes image I/O functions, such as a copy, facsimile, and printing, in the combination of host equipment, an image reader, and an airline printer, and aims at offering the image input/output system and the image reader which have said each function cheaply to a user, and its control approach.
[0005]
[Means for Solving the Problem] The image input/output system of this invention which attains the above-mentioned object consists of the following configurations. That is, it has host equipment, an image reader, and an airline printer, and it functions by combining each of said equipment suitably as the printing system which carries out the printout of the data from said host equipment with said airline printer, the copy system which carries out the printout of the image data read with said image reader with said airline printer, and each system of the facsimile system transmitted through the means of communications in which said host equipment has the image read with said image reader.
[0006]
[Embodiment of the Invention] It explains to a detail, referring to an accompanying drawing below about the operation gestalt of this invention.
(The 1st operation gestalt) Drawing 1 is a block diagram explaining the configuration of the computer system (multifunction system) which is the operation gestalt of this invention. In this drawing, 100 is host computers, such as a workstation (WS) and a personal computer (PC), and provides the user with work environments, such as a word processor and a spreadsheet. Moreover, the modem 400 has composition in which option wearing is possible at the host computer 100. A host computer 100 is controlled by performing the program in which CPU103

was stored in main memory 102. Moreover, it has the I/O interface 104 for connecting a program, data, etc. with the external memory 101 for storing or supplying, and a peripheral device.

[0007] An image scanner 200 is equipped with at least two or more sets of I/F, and connection with a host computer 100 and a printer 300 is possible through I / F line 500,501 respectively. A printer 300 receives the control language (it considers as a Page Description Language hereafter) of a printer proper, and the configuration which can operate also as the type (following and Page Description Language printer type) which creates an output image based on it, the type (henceforth, image printer type) which receives an output image directly, and a which type is taken.

[0008] The case where a printing system is realized first is explained in the multifunction system constituted as mentioned above. In drawing 1 , the document drawn up with the host computer 100, a drawing, etc. are changed into the Page Description Language which consists of printed information, form (character code etc.) information, or macro instruction with the printer driver software installed in the host computer 100, and are sent out to an image scanner 200 through a signal line 500.

[0009] Next, drawing 2 is used for below and the data flow of the Page Description Language inputted into the image scanner 200 is explained to it. Drawing 2 is the block diagram showing the configuration of an image scanner 200. In this drawing, 230 is a control panel and a user can perform various setting out to a scanner by operating this. 212 is CPU and is controlling in generalization host I/F211 connected to the system bus based on the control program memorized by ROM213, printer I/F216, and image reading section I/F217 grade. In addition, the control program memorized by ROM213 consists of the execute step shown in the flow chart of drawing 3 . RAM214 is buffer memory for storage of the information set up from the control panel 230, the memory used as the work piece of CPU212, and image memory 215 to once store the image read in the image reading section 217.

[0010] In the image scanner 200 which takes the above configurations, if a Page Description Language is received from a host computer 100 by host I/F211, control of drawing 3 will be performed. First, after performing initialization processing (step S101), this is judged to be print data (step S102-printing), and carries out through to printer I/F216 from a system bus, and CPU212 allotted to the control section 210 sends it out to a printer 300 through a signal line 501 (step S103).

[0011] Next, drawing 4 is used for below and the data flow of this Page Description Language inputted into the printer 300 is explained to it. Drawing 4 is the block diagram showing the configuration of a printer 300. In this drawing, 330 is a control panel and can perform various setting out to a printer by operating this to a user. 312 is CPU and performs reading of the control program memorized by ROM313 and output image creation program execution, or a font. In addition, the control program memorized by ROM313 consists of the execute step shown in the flow chart of drawing 5 . 314 is RAM and becomes the work area of CPU312. 315 is page memory which stores the printed information expressed by the Page Description Language. Moreover, 316 is image memory which stores an output image pattern.

[0012] In the printer 300 which takes the above configurations, if this Page Description Language is received from an image scanner by scanner I/F311, control of drawing 5 will be performed by the printer 300. Equipment is initialized first (step S201). If data are received (step S202- YES), a video controller 310 stores this in the page memory 315 first (step S203). If storing for 1 page ends (step S204- YES), a character pattern, a form pattern, etc. which correspond based on the data of the Page Description Language stored in the page memory 315 next will be read from ROM313, and an output image will be created to image memory 215 (step S205). After creation of an output image is completed, a video controller 310 sends out an output image and a printer engine control signal to printer engine 320 through engine I/F317 (step S206). And printing is made according to a series of electrophotography processes. Although the printer showed the case of Page Description Language printer type [above-mentioned], in this operation gestalt, it is possible also by the image printer type. It repeats until the page which should be printed ends the above.

[0013] Then, the case where a copy system is realized in the multifunction system of this invention is explained. A manuscript is set to an image scanner 200, image reading is started, and it changes into the Page Description Language which will change an image scanner 200 into the predetermined image data which had the read image set up if it judges that the system is operating by the copy function (drawing 3 step S102-copy), and stores in the image memory 216 in drawing 2 , and a printer interprets one by one, and sends out to a printer 300 (step S104). At this time, the Page Description Language after conversion is only image description, and description of a character code etc. is not included.
[0014] A printer 300 creates an output image in the way of drawing 5 in response to a Page Description Language from an image scanner. However, in order to receive data as a Page Description Language in this case, in case data are stored in page memory at step S203, it changes into bit map data from a Page Description Language. It can copy with outputting to the recording paper according to the electrophotography process of an after that single string. Moreover, since what is necessary is just to transmit the image data which read the printer 300 with the image scanner 200 by making it operate by the image printer type with a bitmapped image, it is also possible to mitigate the burden of the control section 210 of an image scanner 200.
[0015] Finally, the case where a facsimile system is realized in the multifunction system of this invention is explained. A host computer 100 is equipped with a modem and facsimile application software (henceforth, facsimile software) is installed further. The data with which it has been first sent through a public line in reception are stored in the main memory 102 or external memory 101 in a host computer 100 with facsimile software temporarily. And received data can be seen on the screen of a host computer 100 by the viewer provided as a utility of facsimile software. Furthermore, when received data need to be saved, received data may be saved at the external memory 101 in a host computer, or switch printing of the multifunction system may be carried out at a printing system.
[0016] Next, if it is the document drawn up with the word processor of a host computer 100 etc., in transmission, these document data will be bitmapped-image-ized with facsimile software, it will transpose them to the predetermined code only for facsimile further, and will be transmitted through a public line. Moreover, what is necessary is to read image data using an image scanner 200 and just to pass this image data to facsimile software to read a document [finishing / creation] etc. into space and transmit to it. In drawing 3 , the control with the scanner 200 in that case passes it to a host computer 100, after it judges that the multifunction system is operating as facsimile (step S102-facsimile) and it reads an image first (step S104).
[0017] With a host computer 100, the image data which received is transmitted on a public line through a modem 400. In addition, it can also be set up with the control panel 230 on an image scanner by which function a multifunction system operates, and it can also be set up from a host computer 100. Drawing 7 is a control procedure with the host computer at the time of setting up from a host computer 100.
[0018] First, an operator inputs a desired function with input devices, such as a keyboard of a host computer, (step S71). Next, the set-up function is transmitted to an image scanner 200 (step S72). In this way, transmitted setting out is used as a judgment ingredient in step S102 of drawing 3 with an image scanner 200.
[0019] Thus, each function of printing, a copy, and facsimile is realizable in the combination of a host computer, an image scanner, and a printer. In addition, drawing 8 is the sectional view showing the internal structure of the laser beam printer (it abbreviates to LBP hereafter) which is an example of the engine 320 in the printer 300 of this operation gestalt, and this LBP can input an image data etc. and can print it on the recording paper.
[0020] In drawing, 740 is a LBP body and forms an image based on the character pattern supplied in the record paper which is a record medium. The control panel with which, as for 700, a switch, an LED drop, etc. for actuation are allotted, and 701 are printer control units which analyze control, character-pattern information, etc. on the LBP740 whole. This printer control unit 701 mainly changes character-pattern information into a video signal, and outputs it to a laser driver 702.

[0021] A laser driver 702 is a circuit for driving semiconductor laser 703, and carries out the on-off change of the laser beam 704 discharged from semiconductor laser 703 according to the inputted video signal. A laser beam 704 is shaken at a longitudinal direction by the rotating polygon 705, and scans the electrostatic drum 706 top. Thereby, the electrostatic latent image of a character pattern is formed on the electrostatic drum 706. After this latent image is developed with the development unit 707 of electrostatic drum 706 perimeter, it is imprinted by the recording paper. It is contained by the form cassette 708 which equipped this recording paper with the cut sheet recording paper at LBP740 using the cut sheet, it is incorporated in equipment with the feed roller 709 and the conveyance rollers 710 and 711, and the electrostatic drum 706 is supplied.
[0022] In addition, although the laser beam printer was made into the example and explained as image formation equipment of this example, it is not limited to this and can be adapted for the ink jet printer explained below.
(2nd operation gestalt) Next, in case the 2nd operation gestalt realizes a copy system, an OCR function (character recognition function) is added to the control section of an image scanner, and character recognition of the read document is carried out, and an alphabetic character image is changed into a character code, and transmits it to an external device.
[0023] First, the case where a copy system is realized in the multifunction system of this operation gestalt is explained. If a manuscript is set to an image scanner 200 in drawing 1 and image reading is started like the 1st above-mentioned operation gestalt, changing into the predetermined image data which had the read image set up, storing in the image memory 216 in drawing 2 , and using an OCR function, an image scanner 200 is changed into the Page Description Language which a printer interprets one by one, and is sent out to a printer 300. As for the Page Description Language, description of a character code, a font, and magnitude is made at this time.
[0024] Drawing 6 shows the conversion procedure to this Page Description Language. The procedure of drawing 6 is performed in step S104 of drawing 3 . First, it judges whether character recognition is carried out to reading an image from the image (step S62). (step S61) An image scanner 200 may be whether to have the character recognition function, and this criterion may be restricted, when it has a character recognition function and the copy function is being performed. Moreover, setting out may be followed from a host computer 100 or a control panel 230. When judged with carrying out character recognition, character recognition processing is performed. This should just be the well-known technique of extracting the description from an image and recognizing similarity for it as a scale character pattern as compared with a predetermined pattern (step S63). Thus, if an alphabetic character is recognized, it will change into a printer control language according to an alphabetic character part and an image part (step S64).
[0025] A printer 300 receives a Page Description Language from an image scanner 200, and it creates an output image, reading font information as well as the case of the printing system shown in the above-mentioned operation gestalt 1 etc. However, in case the Page Description Language which receives contains a character code, a font, and magnitude and an image data is generated, it is necessary to change such data into an image. If an image is generated, it can copy with outputting to the recording paper according to the electrophotography process of an after that single string. Thus, an OCR function is prepared in an image scanner, and if a copy system is constituted, since a character code etc. uses the font with which the printer was equipped, it can obtain the high-definition copy output by image scanner resolution.
[0026]
[Other operation gestalten] In addition, even if it applies this invention to the system which consists of two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device. Moreover, the object of this invention is attained also by supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the

system or equipment was stored in the storage.
[0027] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention. As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.
[0028] Moreover, by performing the program code which the computer read, a part or all of processing that OS (operating system) which the function of the operation gestalt mentioned above is not only realized, but is working on a computer based on directions of the program code is actual is performed, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained.
[0029] Furthermore, after the program code read from the storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or the computer is equipped, a part or all of processing that the CPU with which the functional add-in board and functional expansion unit are equipped is actual performs, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained based on directions of the program code.
[0030]
[Effect of the Invention] As explained above, according to the image input/output system and the image reader, and its control approach of this invention, many image I/O functions, such as printing, a copy, and facsimile, are cheaply realizable.

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TECHNICAL FIELD

[Field of the Invention] This invention is the combination of airline printers, such as image readers, such as host equipments, such as a host computer which has communication facility, and an image scanner, and a printer, and relates to the image input/output system and the image reader which realize many functions covering I/O of images, such as a printing system, a copy system, and a facsimile system, at large, and its control approach.

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PRIOR ART

[Description of the Prior Art] When a document etc. was copied conventionally, a copying machine, a document, etc. were transmitted and received through the telephone line and facsimile apparatus, a document, etc. were printed, according to the function, the separate hardware configuration was taken like the printing system which connected the printer with the host computer.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to the image input/output system and the image reader, and its control approach of this invention, many image I/O functions, such as printing, a copy, and facsimile, are cheaply realizable.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in the former, in spite of having used the same equipment as the image input section and the image output section of a copying machine, facsimile apparatus, and a printing system, since each function was realized by separate hardware, the user had to purchase separate hardware, although each function is used, and had the problem of becoming a cost rise.
[0004] This invention was made in order to solve the above-mentioned trouble, it realizes image I/O functions, such as a copy, facsimile, and printing, in the combination of host equipment, an image reader, and an airline printer, and aims at offering the image input/output system and the image reader which have said each function cheaply to a user, and its control approach.

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MEANS

[Means for Solving the Problem] The image input/output system of this invention which attains the above-mentioned object consists of the following configurations. That is, it has host equipment, an image reader, and an airline printer, and it functions by combining each of said equipment suitably as the printing system which carries out the printout of the data from said host equipment with said airline printer, the copy system which carries out the printout of the image data read with said image reader with said airline printer, and each system of the facsimile system transmitted through the means of communications in which said host equipment has the image read with said image reader.

[0006]

[Embodiment of the Invention] It explains to a detail, referring to an accompanying drawing below about the operation gestalt of this invention.

(The 1st operation gestalt) Drawing 1 is a block diagram explaining the configuration of the computer system (multifunction system) which is the operation gestalt of this invention. In this drawing, 100 is host computers, such as a workstation (WS) and a personal computer (PC), and provides the user with work environments, such as a word processor and a spreadsheet. Moreover, the modem 400 has composition in which option wearing is possible at the host computer 100. A host computer 100 is controlled by performing the program in which CPU103 was stored in main memory 102. Moreover, it has the I/O interface 104 for connecting a program, data, etc. with the external memory 101 for storing or supplying, and a peripheral device.

[0007] An image scanner 200 is equipped with at least two or more sets of I/F, and connection with a host computer 100 and a printer 300 is possible through I / F line 500,501 respectively. A printer 300 receives the control language (it considers as a Page Description Language hereafter) of a printer proper, and the configuration which can operate also as the type (following and Page Description Language printer type) which creates an output image based on it, the type (henceforth, image printer type) which receives an output image directly, and a which type is taken.

[0008] The case where a printing system is realized first is explained in the multifunction system constituted as mentioned above. In drawing 1 , the document drawn up with the host computer 100, a drawing, etc. are changed into the Page Description Language which consists of printed information, form (character code etc.) information, or macro instruction with the printer driver software installed in the host computer 100, and are sent out to an image scanner 200 through a signal line 500.

[0009] Next, drawing 2 is used for below and the data flow of the Page Description Language inputted into the image scanner 200 is explained to it. Drawing 2 is the block diagram showing the configuration of an image scanner 200. In this drawing, 230 is a control panel and a user can perform various setting out to a scanner by operating this. 212 is CPU and is controlling in generalization host I/F211 connected to the system bus based on the control program memorized by ROM213, printer I/F216, and image reading section I/F217 grade. In addition, the control program memorized by ROM213 consists of the execute step shown in the flow chart of drawing 3 . RAM214 is buffer memory for storage of the information set up from the control

panel 230, the memory used as the work piece of CPU212, and image memory 215 to once store the image read in the image reading section 217.
[0010] In the image scanner 200 which takes the above configurations, if a Page Description Language is received from a host computer 100 by host I/F211, control of drawing 3 will be performed. First, after performing initialization processing (step S101), this is judged to be print data (step S102–printing), and carries out through to printer I/F216 from a system bus, and CPU212 allotted to the control section 210 sends it out to a printer 300 through a signal line 501 (step S103).
[0011] Next, drawing 4 is used for below and the data flow of this Page Description Language inputted into the printer 300 is explained to it. Drawing 4 is the block diagram showing the configuration of a printer 300. In this drawing, 330 is a control panel and can perform various setting out to a printer by operating this to a user. 312 is CPU and performs reading of the control program memorized by ROM313 and output image creation program execution, or a font. In addition, the control program memorized by ROM313 consists of the execute step shown in the flow chart of drawing 5 . 314 is RAM and becomes the work area of CPU312. 315 is page memory which stores the printed information expressed by the Page Description Language. Moreover, 316 is image memory which stores an output image pattern.
[0012] In the printer 300 which takes the above configurations, if this Page Description Language is received from an image scanner by scanner I/F311, control of drawing 5 will be performed by the printer 300. Equipment is initialized first (step S201). If data are received (step S202– YES), a video controller 310 stores this in the page memory 315 first (step S203). If storing for 1 page ends (step S204– YES), a character pattern, a form pattern, etc. which correspond based on the data of the Page Description Language stored in the page memory 315 next will be read from ROM313, and an output image will be created to image memory 215 (step S205). After creation of an output image is completed, a video controller 310 sends out an output image and a printer engine control signal to printer engine 320 through engine I/F317 (step S206). And printing is made according to a series of electrophotography processes. Although the printer showed the case of Page Description Language printer type [above–mentioned], in this operation gestalt, it is possible also by the image printer type. It repeats until the page which should be printed ends the above.
[0013] Then, the case where a copy system is realized in the multifunction system of this invention is explained. A manuscript is set to an image scanner 200, image reading is started, and it changes into the Page Description Language which will change an image scanner 200 into the predetermined image data which had the read image set up if it judges that the system is operating by the copy function (drawing 3 step S102–copy), and stores in the image memory 216 in drawing 2 , and a printer interprets one by one, and sends out to a printer 300 (step S104). At this time, the Page Description Language after conversion is only image description, and description of a character code etc. is not included.
[0014] A printer 300 creates an output image in the way of drawing 5 in response to a Page Description Language from an image scanner. However, in order to receive data as a Page Description Language in this case, in case data are stored in page memory at step S203, it changes into bit map data from a Page Description Language. It can copy with outputting to the recording paper according to the electrophotography process of an after that single string. Moreover, since what is necessary is just to transmit the image data which read the printer 300 with the image scanner 200 by making it operate by the image printer type with a bitmapped image, it is also possible to mitigate the burden of the control section 210 of an image scanner 200.
[0015] Finally, the case where a facsimile system is realized in the multifunction system of this invention is explained. A host computer 100 is equipped with a modem and facsimile application software (henceforth, facsimile software) is installed further. The data with which it has been first sent through a public line in reception are stored in the main memory 102 or external memory 101 in a host computer 100 with facsimile software temporarily. And received data can be seen on the screen of a host computer 100 by the viewer provided as a utility of facsimile software. Furthermore, when received data need to be saved, received data may be saved at the

external memory 101 in a host computer, or switch printing of the multifunction system may be carried out at a printing system.
[0016] Next, if it is the document drawn up with the word processor of a host computer 100 etc., in transmission, these document data will be bitmapped-image-ized with facsimile software, it will transpose them to the predetermined code only for facsimile further, and will be transmitted through a public line. Moreover, what is necessary is to read image data using an image scanner 200 and just to pass this image data to facsimile software to read a document [finishing / creation] etc. into space and transmit to it. In drawing 3 , the control with the scanner 200 in that case passes it to a host computer 100, after it judges that the multifunction system is operating as facsimile (step S102-facsimile) and it reads an image first (step S104).
[0017] With a host computer 100, the image data which received is transmitted on a public line through a modem 400. In addition, it can also be set up with the control panel 230 on an image scanner by which function a multifunction system operates, and it can also be set up from a host computer 100. Drawing 7 is a control procedure with the host computer at the time of setting up from a host computer 100.
[0018] First, an operator inputs a desired function with input devices, such as a keyboard of a host computer, (step S71). Next, the set-up function is transmitted to an image scanner 200 (step S72). In this way, transmitted setting out is used as a judgment ingredient in step S102 of drawing 3 with an image scanner 200.
[0019] Thus, each function of printing, a copy, and facsimile is realizable in the combination of a host computer, an image scanner, and a printer. In addition, drawing 8 is the sectional view showing the internal structure of the laser beam printer (it abbreviates to LBP hereafter) which is an example of the engine 320 in the printer 300 of this operation gestalt, and this LBP can input an image data etc. and can print it on the recording paper.
[0020] In drawing, 740 is a LBP body and forms an image based on the character pattern supplied in the record paper which is a record medium. The control panel with which, as for 700, a switch, an LED drop, etc. for actuation are allotted, and 701 are printer control units which analyze control, character-pattern information, etc. on the LBP740 whole. This printer control unit 701 mainly changes character-pattern information into a video signal, and outputs it to a laser driver 702.
[0021] A laser driver 702 is a circuit for driving semiconductor laser 703, and carries out the on-off change of the laser beam 704 discharged from semiconductor laser 703 according to the inputted video signal. A laser beam 704 is shaken at a longitudinal direction by the rotating polygon 705, and scans the electrostatic drum 706 top. Thereby, the electrostatic latent image of a character pattern is formed on the electrostatic drum 706. After this latent image is developed with the development unit 707 of electrostatic drum 706 perimeter, it is imprinted by the recording paper. It is contained by the form cassette 708 which equipped this recording paper with the cut sheet recording paper at LBP740 using the cut sheet, it is incorporated in equipment with the feed roller 709 and the conveyance rollers 710 and 711, and the electrostatic drum 706 is supplied.
[0022] In addition, although the laser beam printer was made into the example and explained as image formation equipment of this example, it is not limited to this and can be adapted for the ink jet printer explained below.
(2nd operation gestalt) Next, in case the 2nd operation gestalt realizes a copy system, an OCR function (character recognition function) is added to the control section of an image scanner, and character recognition of the read document is carried out, and an alphabetic character image is changed into a character code, and transmits it to an external device.
[0023] First, the case where a copy system is realized in the multifunction system of this operation gestalt is explained. If a manuscript is set to an image scanner 200 in drawing 1 and image reading is started like the 1st above-mentioned operation gestalt, changing into the predetermined image data which had the read image set up, storing in the image memory 216 in drawing 2 , and using an OCR function, an image scanner 200 is changed into the Page Description Language which a printer interprets one by one, and is sent out to a printer 300. As for the Page Description Language, description of a character code, a font, and magnitude is

made at this time.
[0024] Drawing 6 shows the conversion procedure to this Page Description Language. The procedure of drawing 6 is performed in step S104 of drawing 3 . First, it judges whether character recognition is carried out to reading an image from the image (step S62). (step S61) An image scanner 200 may be whether to have the character recognition function, and this criterion may be restricted, when it has a character recognition function and the copy function is being performed. Moreover, setting out may be followed from a host computer 100 or a control panel 230. When judged with carrying out character recognition, character recognition processing is performed. This should just be the well-known technique of extracting the description from an image and recognizing similarity for it as a scale character pattern as compared with a predetermined pattern (step S63). Thus, if an alphabetic character is recognized, it will change into a printer control language according to an alphabetic character part and an image part (step S64).
[0025] A printer 300 receives a Page Description Language from an image scanner 200, and it creates an output image, reading font information as well as the case of the printing system shown in the above-mentioned operation gestalt 1 etc. However, in case the Page Description Language which receives contains a character code, a font, and magnitude and an image data is generated, it is necessary to change such data into an image. If an image is generated, it can copy with outputting to the recording paper according to the electrophotography process of an after that single string. Thus, an OCR function is prepared in an image scanner, and if a copy system is constituted, since a character code etc. uses the font with which the printer was equipped, it can obtain the high-definition copy output by image scanner resolution.
[0026]
[Other operation gestalten] In addition, even if it applies this invention to the system which consists of two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device. Moreover, the object of this invention is attained also by supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage.
[0027] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention. As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.
[0028] Moreover, by performing the program code which the computer read, a part or all of processing that OS (operating system) which the function of the operation gestalt mentioned above is not only realized, but is working on a computer based on directions of the program code is actual is performed, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained.
[0029] Furthermore, after the program code read from the storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or the computer is equipped, a part or all of processing that the CPU with which the functional add-in board and functional expansion unit are equipped is actual performs, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained based on directions of the program code.

[Translation done.]

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the multifunction structure of a system of an operation gestalt.
[Drawing 2] It is the block diagram showing the configuration of an image scanner.
[Drawing 3] It is the flow chart which shows the control flow of an image scanner.
[Drawing 4] It is the block diagram showing the configuration of a printer.
[Drawing 5] It is the flow chart which shows the control flow of a printer.
[Drawing 6] It is the flow chart which shows the control flow of an image scanner.
[Drawing 7] It is the flow chart which shows the control flow of a host computer.
[Drawing 8] It is the sectional view showing the configuration of a laser beam printer.
[Description of Notations]
100 Host Computer
200 Image Scanner
210 Control Section
211 Host I/F
212 CPU
213 ROM
214 RAM
215 Image Memory
216 Printer I/F
217 Image Reading Section I/F
220 Image Reading Section
230 Control Panel
300 Printer
310 Video Controller
311 Scanner I/F
312 CPU
313 ROM
314 RAM
315 Page Memory
316 Image Memory
317 Engine I/F
320 Printer Engine
330 Control Panel
400 Modem
500,501 Signal line

[Translation done.]

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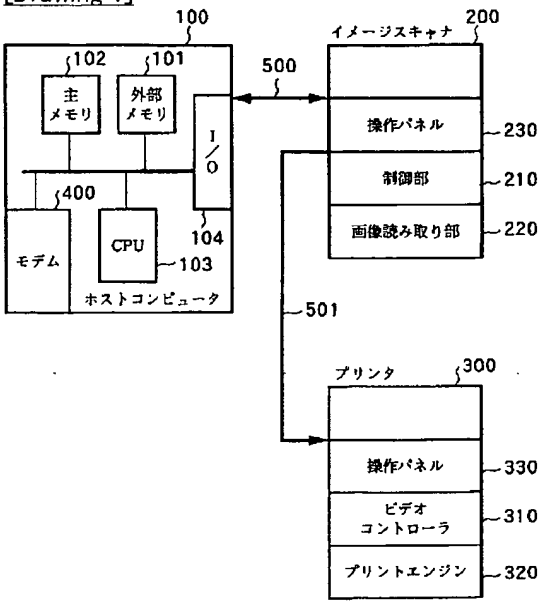
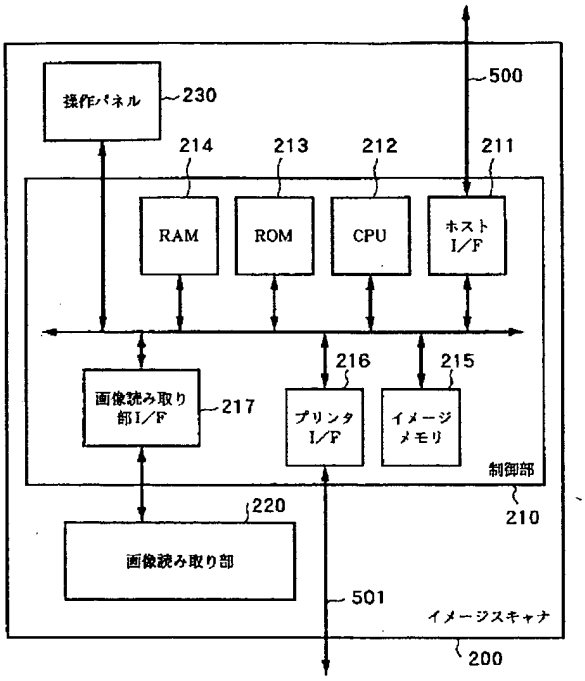
DRAWINGS

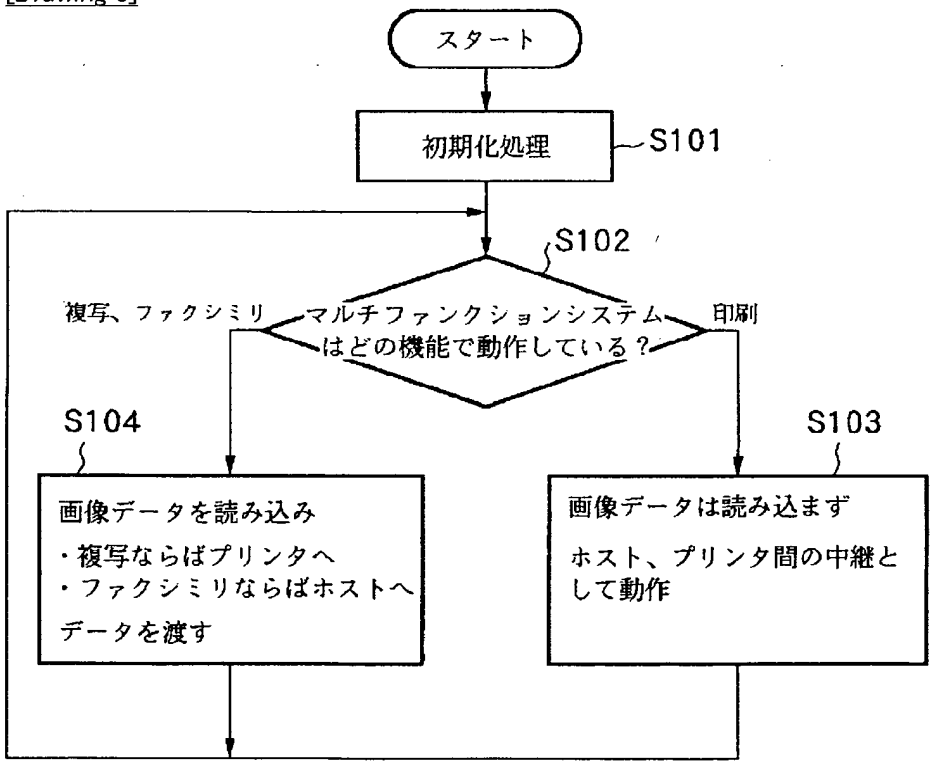
[Drawing 1]



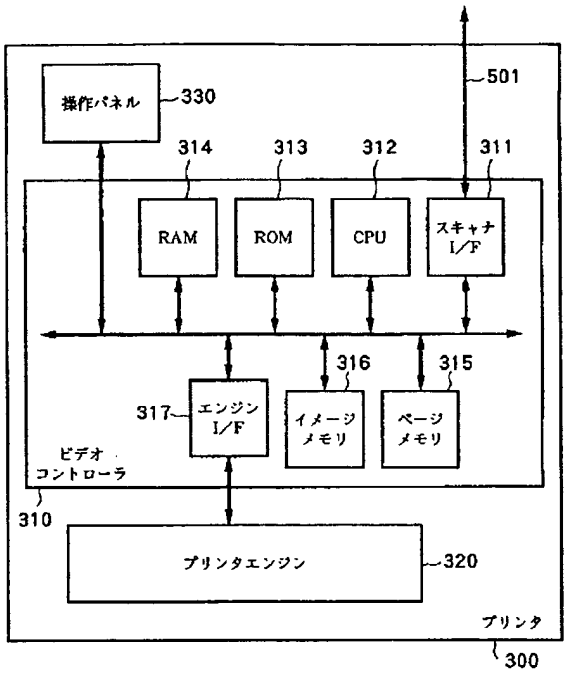
[Drawing 2]



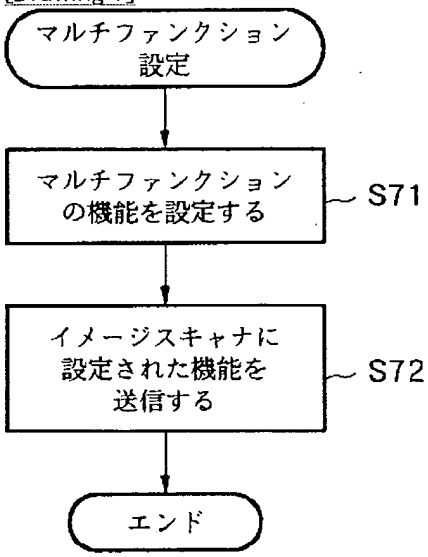
[Drawing 3]



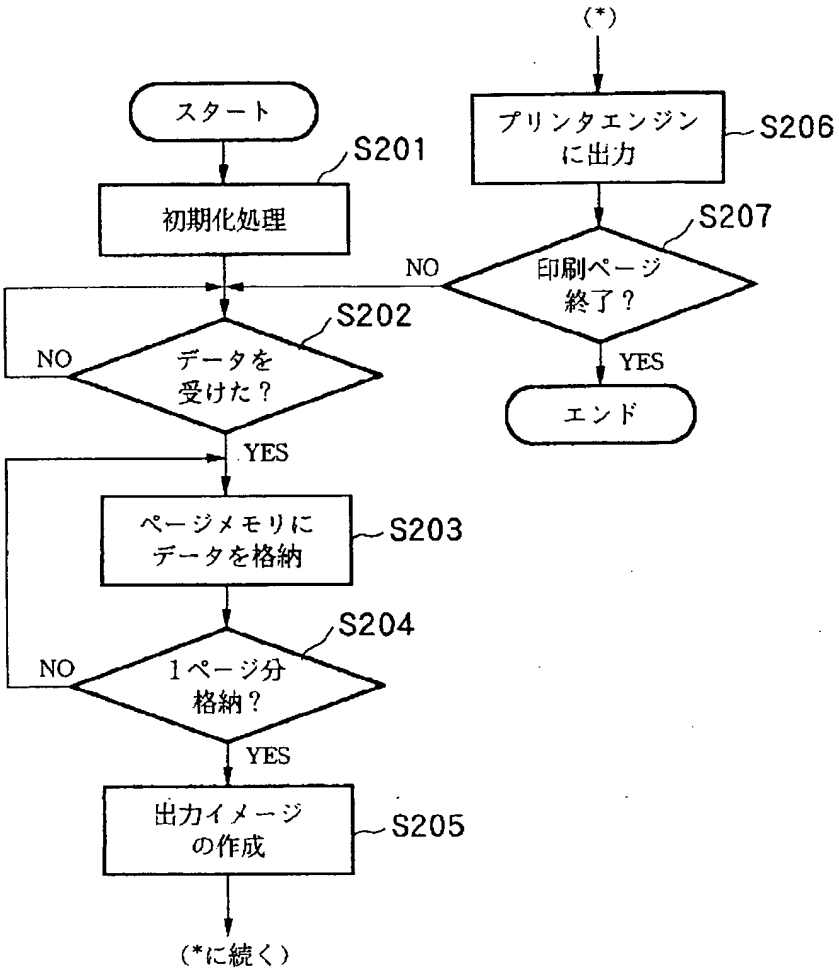
[Drawing 4]



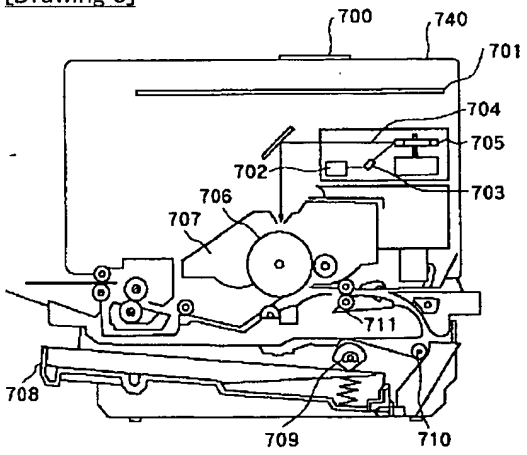
[Drawing 7]



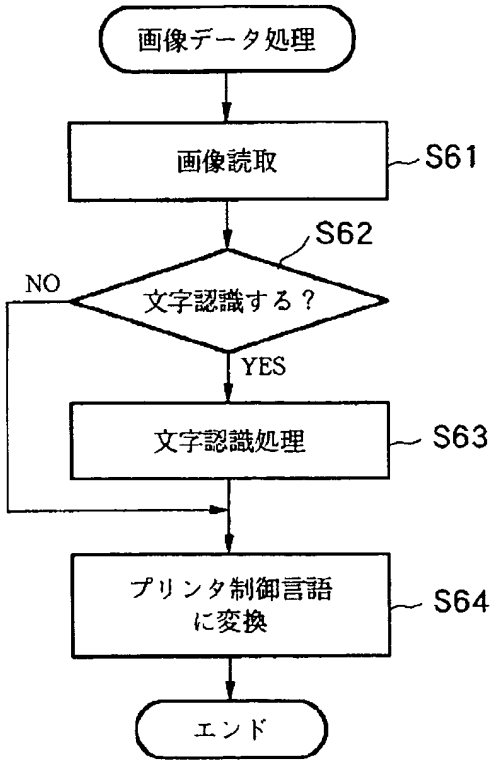
[Drawing 5]



[Drawing 8]



[Drawing 6]



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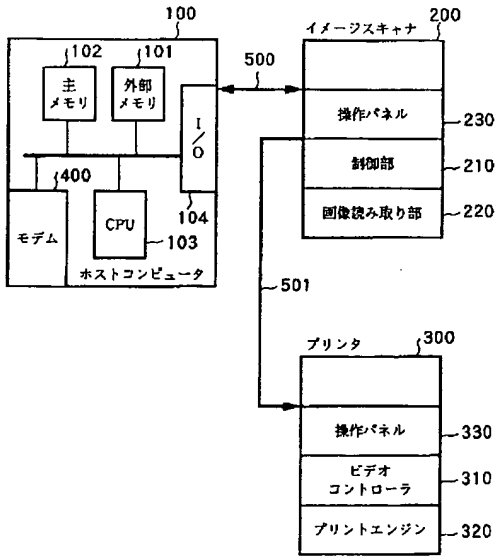
最終頁に続く

(54)【発明の名称】　画像入出力システム及び画像読取り装置とその制御方法

(57)【要約】

【課題】複写機、印刷機、ファクシミリは独立した装置であったため高価だった。

【解決手段】ホスト１００とイメージスキャナ２００とプリンタ３００とを接続し、印刷システムとして動かす場合には、イメージスキャナ２００はホスト１００からのデータをプリンタ３００に転送する。複写機として機能する場合には、イメージスキャナ２００で読んだ画像をプリンタ３００から印刷出力する。ファクシミリとして機能する場合には、送信時にはイメージスキャナ２００から読んだ画像をホスト１００に送ってモデム４００を介して電話網に送信し、受信時には、受信したデータを印刷システムとして機能する場合と同じ要領で印刷出力する。



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【特許請求の範囲】

【請求項１】　ホスト装置と、画像読取り装置と、印刷装置とを備え、前記各装置を適宜組合わせることで、前記ホスト装置からのデータを前記印刷装置により印刷出力する印刷システムと、前記画像読取り装置により読み取った画像データを前記印刷装置により印刷出力する複写システムと、前記画像読取り装置により読み取った画像を前記ホスト装置が有する通信手段を介して送信するファクシミリシステムの各システムとして機能することを特徴とする画像入出力システム。

【請求項２】　前記画像読取り装置は、読み込んだ画像データをページ記述言語に変換する変換手段を有し、該変換手段によりページ記述言語に変換されたデータを前記印刷装置に送出し、前記印刷装置は、ページ記述言語を解釈して画像データを生成する解釈手段を有することを特徴とする請求項１に記載の画像入出力システム。

【請求項３】　前記印刷手段は、画像データをそのまま受信して印刷出力することを特徴とする請求項１に記載の画像入出力システム。

【請求項４】　前記画像読取り装置は、読み取った画像から文字を認識する文字認識手段を有することを特徴とする請求項１または２に記載の画像入出力システム。

【請求項５】　ホスト装置と印刷装置とに接続された画像読取り装置であって、
画像を読み込む画像読み込み手段と、
遂行すべき機能を設定する設定手段と、
前記設定手段による設定が第１の設定である場合には、前記ホスト装置から受信したデータを前記印刷装置に転送し、第２の設定である場合には、前記画像読み込み手段により読み込んだ画像を前記印刷装置に転送し、第３の設定である場合には、前記画像読み込み手段により読み込んだ画像を前記ホスト装置に転送する制御手段とを備えることを特徴とする画像読取り装置。

【請求項６】　前記画像読み込み手段により読み込んだ画像を、ページ記述言語に変換する変換手段を更に備えることを特徴とする請求項５に記載の画像読取り装置。

【請求項７】　前記画像読み込み手段により読み込んだ画像から、文字を認識する文字認識手段を更に備えることを特徴とする請求項５または６に記載の画像読取り装置。

【請求項８】　前記設定手段は、遂行すべき機能の設定を前記ホスト装置から受信することを特徴とする請求項５に記載の画像読取り装置。

【請求項９】　ホスト装置と印刷装置とに接続された画像読取り装置の制御方法であって、
画像を読み込む画像読み込み工程と、
遂行すべき機能を設定する設定工程と、
前記設定工程による設定が第１の設定である場合には、前記ホスト装置から受信したデータを前記印刷装置に転送し、第２の設定である場合には、前記画像読み込み工程により読み込んだ画像を前記印刷装置に転送し、第３の設定である場合には、前記画像読み込み工程により読み込んだ画像を前記ホスト装置に転送する制御工程とを備えることを特徴とする画像読取り装置の制御方法。

【請求項１０】　前記画像読み込み工程により読み込んだ画像を、ページ記述言語に変換する変換工程を更に備えることを特徴とする請求項９に記載の画像読取り装置の制御方法。

【請求項１１】　前記画像読み込み工程により読み込んだ画像から、文字を認識する文字認識工程を更に備えることを特徴とする請求項９または１０に記載の画像読取り装置の制御方法。

【請求項１２】　前記設定工程は、遂行すべき機能の設定を前記ホスト装置から受信することを特徴とする請求項９に記載の画像読取り装置の制御方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、例えば通信機能を有するホストコンピュータ等のホスト装置、イメージスキャナ等の画像読取り装置、プリンタ等の印刷装置の組合わせで、印刷システム、複写システム、ファクシミリシステムなどの画像の入出力全般にわたる多くの機能を実現する画像入出力システム及び画像読取り装置とその制御方法に関する。

【０００２】

【従来の技術】従来、書類等を複写する場合には複写機、書類等を電話回線を通じて送受信する場合にはファクシミリ装置、また書類等を印刷する場合にはホストコンピュータとプリンタを接続した印刷システムというように機能に応じて別々のハードウェア構成をとっていた。

【０００３】

【発明が解決しようとする課題】ところが、従来では複写機、ファクシミリ装置、印刷システムの画像入力部及び画像出力部に同じ装置を用いているにも関わらず、各機能は別々のハードウェアで実現されていたためユーザは各機能を使用するのに別々のハードウェアを購入しなければならずコストアップになるという問題があった。

【０００４】本発明は、上記の問題点を解決するためになされたもので、複写、ファクシミリ、印刷などの画像入出力機能を、ホスト装置、画像読取装置、及び、印刷装置の組合せで実現し、ユーザに対し安価に前記各機能を有する画像入出力システム及び画像読取り装置とその制御方法を提供することを目的とする。

【０００５】

【課題を解決するための手段】上記目的を達成する本発明の画像入出力システムはつぎのような構成から成る。すなわち、ホスト装置と、画像読取り装置と、印刷装置とを備え、前記各装置を適宜組合わせることで、前記ホスト装置からのデータを前記印刷装置により印刷出力す

る印刷システムと、前記画像読取り装置により読み取った画像データを前記印刷装置により印刷出力する複写システムと、前記画像読取り装置により読み取った画像を前記ホスト装置が有する通信手段を介して送信するファクシミリシステムの各システムとして機能する。

【０００６】

【発明の実施の形態】本発明の実施形態について以下に添付図面を参照しながら詳細に説明する。

（第１実施形態）図１は本発明の実施形態であるコンピュータシステム（マルチファンクションシステム）の構成を説明するブロック図である。同図において、１００はワークステーション（ＷＳ）やパーソナルコンピュータ（ＰＣ）等のホストコンピュータであり、ワードプロセッサや表計算等の作業環境をユーザに提供している。またホストコンピュータ１００にはモデム４００がオプション装着可能な構成になっている。ホストコンピュータ１００は、ＣＰＵ１０３が主メモリ１０２に格納されたプログラムを実行することで制御される。また、プログラムやデータ等を格納または供給するための外部メモリ１０１と、周辺装置と接続するためのＩ／Ｏインターフェース１０４を備えている。

【０００７】イメージスキャナ２００には少なくとも２基以上のＩ／Ｆが備えられ、それぞれＩ／Ｆ線５００，５０１を介しホストコンピュータ１００、及びプリンタ３００への接続が可能である。プリンタ３００は、プリンタ固有の制御言語（以下、ページ記述言語とする）を受け、それに基づき出力イメージを作成するタイプ（以下、ページ記述言語プリンタタイプ）と、出力イメージを直接受け取るタイプ（以下、イメージプリンタタイプ）と、どちらのタイプとしても動作可能な構成をとる。

【０００８】以上のように構成されたマルチファンクションシステムにおいて、まず印刷システムを実現する場合について説明する。図１において、ホストコンピュータ１００で作成された文書や図面等は、ホストコンピュータ１００にインストールされたプリンタドライバソフトウェアにより印刷情報（文字コード等）やフォーム情報あるいはマクロ命令からなるページ記述言語に変換され、信号線５００を介してイメージスキャナ２００に送出される。

【０００９】次にイメージスキャナ２００に入力されたページ記述言語のデータの流れを以下に図２を用いて説明する。図２はイメージスキャナ２００の構成を示すブロック図である。同図において、２３０は操作パネルであり、ユーザはこれを操作することによりスキャナに対し種々の設定を行なうことができる。２１２はＣＰＵで、ＲＯＭ２１３に記憶された制御プログラムに基づきシステムバスに接続されたホストＩ／Ｆ２１１、プリンタＩ／Ｆ２１６、画像読み取り部Ｉ／Ｆ２１７等を統括的に制御している。尚、ＲＯＭ２１３に記憶された制御プログラムは図３のフローチャートに示される実行ステップから成る。ＲＡＭ２１４は操作パネル２３０から設定された情報の記憶、及びＣＰＵ２１２のワークとなるメモリ、またイメージメモリ２１５は画像読み取り部２１７で読み取られた画像を一旦格納するためのバッファメモリである。

【００１０】以上のような構成をとるイメージスキャナ２００において、ホストコンピュータ１００からページ記述言語をホストＩ／Ｆ２１１で受け取ると、図３の制御が実行される。まず、初期化処理を行った後（ステップＳ１０１）、制御部２１０に配されたＣＰＵ２１２はこれを印刷データであると判断し（ステップＳ１０２－印刷）、システムバスからプリンタＩ／Ｆ２１６にスルーさせ、信号線５０１を介しプリンタ３００に送出する（ステップＳ１０３）。

【００１１】次にプリンタ３００に入力された該ページ記述言語のデータの流れを以下に図４を用いて説明する。図４は、プリンタ３００の構成を示すブロック図である。同図において、３３０は操作パネルであり、ユーザにこれを操作することによりプリンタに対し種々の設定を行なうことができる。３１２はＣＰＵで、ＲＯＭ３１３に記憶された制御プログラム、及び出力イメージ作成プログラムの実行、あるいはフォントの読み込みを行なう。尚、ＲＯＭ３１３に記憶された制御プログラムは図５のフローチャートに示される実行ステップから成る。３１４はＲＡＭでありＣＰＵ３１２のワークエリアとなる。３１５はページ記述言語で表現された印刷情報を格納するページメモリである。また３１６は出力イメージパターンを格納するイメージメモリである。

【００１２】以上のような構成をとるプリンタ３００において、イメージスキャナから該ページ記述言語をスキャナＩ／Ｆ３１１で受けると、プリンタ３００では図５の制御を実行する。まず装置の初期化を行う（ステップＳ２０１）。データを受け取ると（ステップＳ２０２－ＹＥＳ）、ビデオコントローラ３１０は、まずページメモリ３１５にこれを格納する（ステップＳ２０３）。１ページ分の格納が済むと（ステップＳ２０４－ＹＥＳ）、次にページメモリ３１５に格納されたページ記述言語のデータに基づき対応する文字パターンやフォームパターン等をＲＯＭ３１３から読み出し、出力イメージをイメージメモリ２１５に作成する（ステップＳ２０５）。出力イメージの作成が終了すると、ビデオコントローラ３１０は出力イメージ、プリンタエンジン制御信号をエンジンＩ／Ｆ３１７を介し、プリンタエンジン３２０に送出する（ステップＳ２０６）。そして、一連の電子写真プロセスによって印刷がなされる。本実施形態においてプリンタは前述のページ記述言語プリンタタイプの場合を示したが、イメージプリンタタイプでも可能である。以上を、印刷すべきページが終了するまで繰り返す。

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【００１３】続いて、本発明のマルチファンクションシステムにおいて複写システムを実現する場合について説明する。イメージスキャナ２００に原稿をセットし画像読み込みを開始し、システムが複写機能で動作していると判断すると（図３ステップＳ１０２－複写）、イメージスキャナ２００は読み込んだ画像を設定された所定の画像データに変換し、図２におけるイメージメモリ２１６に格納し、順次プリンタの解釈するページ記述言語に変換しプリンタ３００に送出する（ステップＳ１０４）。このとき、変換後のページ記述言語はイメージ記述のみで、文字コード等の記述は含まない。

【００１４】プリンタ３００は、イメージスキャナからページ記述言語を受けて図５の要領で出力イメージを作成する。ただし、この場合にはページ記述言語としてデータを受信するため、ステップＳ２０３でページメモリにデータを格納する際に、ページ記述言語からビットマップデータに変換する。その後一連の電子写真プロセスにより記録紙に出力することで複写が行える。また、プリンタ３００をイメージプリンタタイプで動作させることで、イメージスキャナ２００では読み込んだ画像データをビットマップイメージのまま送信すれば良いため、イメージスキャナ２００の制御部２１０の負担を軽減することも可能である。

【００１５】最後に、本発明のマルチファンクションシステムにおいてファクシミリシステムを実現する場合について説明する。ホストコンピュータ１００にはモデムが装着され、さらにファクシミリアプリケーションソフトウェア（以下、ファクシミリソフト）がインストールされている。まず受信の場合は、公衆回線を通じ送られてきたデータは、ファクシミリソフトによって一時ホストコンピュータ１００内の主メモリ１０２あるいは外部メモリ１０１に格納される。そしてファクシミリソフトのユーティリティとして具備されるビューアによって受信データをホストコンピュータ１００の画面上で見ることができる。さらに、受信データの保存が必要な場合は、受信データをホストコンピュータ内の外部メモリ１０１に保存しても、またマルチファンクションシステムを印刷システムに切り換え印刷してもよい。

【００１６】次に送信の場合は、ホストコンピュータ１００のワードプロセッサ等で作成した書類であれば、ファクシミリソフトにより該書類データをビットマップイメージ化し、更にはファクシミリ専用の所定のコードに置き換え、公衆回線を通じ送信する。また紙面に作成済みの書類等を読み込んで送信したい場合は、イメージスキャナ２００を用い画像データを読み込んでファクシミリソフトに該画像データを渡せば良い。その場合のスキャナ２００による制御は、図３において、まずマルチファンクションシステムがファクシミリとして動作していると判定され（ステップＳ１０２－ファクシミリ）、画像を読み込んだ後、それをホストコンピュータ１００に渡す（ステップＳ１０４）。

【００１７】ホストコンピュータ１００では受信した画像データをモデム４００を介して公衆回線上に送信する。なお、マルチファンクションシステムがどの機能で動作するかは、イメージスキャナ上の操作パネル２３０で設定することもできるし、ホストコンピュータ１００から設定することもできる。図７はホストコンピュータ１００から設定する際のホストコンピュータによる制御手順である。

【００１８】まず、オペレータが、ホストコンピュータのキーボードなどの入力デバイスにより所望の機能を入力する（ステップＳ７１）。次に、設定された機能を、イメージスキャナ２００に対して送信する（ステップＳ７２）。こうして送信された設定を、イメージスキャナ２００では、図３のステップＳ１０２における判定材料として使用する。

【００１９】このようにホストコンピュータ、イメージスキャナ、プリンタの組合せで印刷、複写、ファクシミリの各機能を実現できる。なお、図８は本実施形態のプリンタ３００におけるエンジン３２０の一例であるレーザビームプリンタ（以下、ＬＢＰと略す）の内部構造を示す断面図で、このＬＢＰは、イメージデータ等を入力して記録紙に印刷することができる。

【００２０】図において、７４０はＬＢＰ本体であり、供給される文字パターン等を基に、記録媒体である記録紙上に像を形成する。７００は操作のためのスイツチ及びＬＥＤ表示器などが配されている操作パネル、７０１はＬＢＰ７４０全体の制御及び文字パターン情報等を解析するプリンタ制御ユニツトである。このプリンタ制御ユニツト７０１は主に文字パターン情報をビデオ信号に変換してレーザドライバ７０２に出力する。

【００２１】レーザドライバ７０２は半導体レーザ７０３を駆動するための回路であり、入力されたビデオ信号に応じて半導体レーザ７０３から発射されるレーザ光７０４をオン・オフ切替えする。レーザ光７０４は回転多面鏡７０５で左右方向に振られて静電ドラム７０６上を走査する。これにより、静電ドラム７０６上には文字パターンの静電潜像が形成される。この潜像は静電ドラム７０６周囲の現像ユニツト７０７により現像された後、記録紙に転写される。この記録紙にはカツトシートを用い、カツトシート記録紙はＬＢＰ７４０に装着した用紙カセツト７０８に収納され、給紙ローラ７０９及び搬送ローラ７１０と７１１とにより装置内に取込まれて、静電ドラム７０６に供給される。

【００２２】尚、本実施例の画像形成装置として、レーザビームプリンタを例にして説明したが、これに限定されるものでなく、以下で説明するインクジェットプリンタ等にも適応可能である。

（第２の実施形態）次に、第２の実施形態は、複写システムを実現する際にＯＣＲ機能（文字認識機能）をイメ

ージスキャナの制御部に付加し、読み込んだ書類を文字認識して、文字画像は文字コードに変換し、それを外部装置に送信するものである。

【００２３】まず、本実施形態のマルチファンクションシステムにおいて複写システムを実現する場合について説明する。前述の第１の実施形態と同様に、図１においてイメージスキャナ２００に原稿をセットし画像読み込みを開始すると、イメージスキャナ２００は読み込んだ画像を設定された所定の画像データに変換し、図２におけるイメージメモリ２１６に格納し、ＯＣＲ機能を働かせながら順次プリンタの解釈するページ記述言語に変換しプリンタ３００に送出する。この時、ページ記述言語は文字コード、フォント、大きさの記述がなされている。

【００２４】図６は、このページ記述言語への変換手順を示している。図６の手順は、図３のステップＳ１０４において実行される。まず、画像を読み取ると（ステップＳ６１）、その画像から文字認識するか判定する（ステップＳ６２）。この判定基準は、イメージスキャナ２００が文字認識機能を有しているか否かであってもよいし、文字認識機能を有し、かつ複写機能を実行している場合に限っても良い。また、ホストコンピュータ１００あるいは操作パネル２３０からの設定に従ってもよい。文字認識すると判定された場合には、文字認識処理を行う。これは、画像から特徴を抽出し、それを所定のパターンと比較して類似度をはかり文字パターンとして認識するという公知の技術であれば良い（ステップＳ６３）。このようにして文字を認識したなら、文字部分と画像部分とに応じてプリンタ制御言語に変換する（ステップＳ６４）。

【００２５】プリンタ３００は、イメージスキャナ２００からページ記述言語を受け、前述の実施形態１に示された印刷システムの場合と同様にしてフォント情報等を読み込みながら出力イメージを作成する。ただし、受信するページ記述言語は文字コード，フォント，大きさを含んでおり、イメージデータを生成する際には、そのようなデータをイメージに変換することが必要となる。イメージを生成したなら、その後一連の電子写真プロセスにより記録紙に出力することで複写が行える。このようにＯＣＲ機能をイメージスキャナに設け、複写システムを構成すれば文字コード等はプリンタに備えられたフォントを用いるのでイメージスキャナ解像度によらない高品位な複写出力を得られる。

【００２６】

【他の実施形態】なお、本発明は、複数の機器（例えばホストコンピュータ，インタフェイス機器，リーダ，プリンタなど）から構成されるシステムに適用しても、一つの機器からなる装置（例えば、複写機，ファクシミリ装置など）に適用してもよい。また、本発明の目的は、前述した実施形態の機能を実現するソフトウェアのプログラムコードを記録した記憶媒体を、システムあるいは装置に供給し、そのシステムあるいは装置のコンピュータ（またはＣＰＵやＭＰＵ）が記憶媒体に格納されたプログラムコードを読出し実行することによっても、達成される。

【００２７】この場合、記憶媒体から読出されたプログラムコード自体が前述した実施形態の機能を実現することになり、そのプログラムコードを記憶した記憶媒体は本発明を構成することになる。プログラムコードを供給するための記憶媒体としては、例えば、フロッピディスク，ハードディスク，光ディスク，光磁気ディスク，ＣＤ－ＲＯＭ，ＣＤ－Ｒ，磁気テープ，不揮発性のメモリカード，ＲＯＭなどを用いることができる。

【００２８】また、コンピュータが読出したプログラムコードを実行することにより、前述した実施形態の機能が実現されるだけでなく、そのプログラムコードの指示に基づき、コンピュータ上で稼働しているＯＳ（オペレーティングシステム）などが実際の処理の一部または全部を行い、その処理によって前述した実施形態の機能が実現される場合も含まれる。

【００２９】さらに、記憶媒体から読出されたプログラムコードが、コンピュータに挿入された機能拡張ボードやコンピュータに接続された機能拡張ユニットに備わるメモリに書込まれた後、そのプログラムコードの指示に基づき、その機能拡張ボードや機能拡張ユニットに備わるＣＰＵなどが実際の処理の一部または全部を行い、その処理によって前述した実施形態の機能が実現される場合も含まれる。

【００３０】

【発明の効果】以上説明したように、本発明の画像入出力システム及び画像読取り装置とその制御方法によれば、印刷、複写、ファクシミリといった多くの画像入出力機能を安価に実現できる。

【図面の簡単な説明】

【図１】実施形態のマルチファンクションシステムの構成を示すブロック図である。

【図２】イメージスキャナの構成を示すブロック図である。

【図３】イメージスキャナの制御の流れを示すフローチャートである。

【図４】プリンタの構成を示すブロック図である。

【図５】プリンタの制御の流れを示すフローチャートである。

【図６】イメージスキャナの制御の流れを示すフローチャートである。

【図７】ホストコンピュータの制御の流れを示すフローチャートである。

【図８】レーザビームプリンタの構成を示す断面図である。

【符号の説明】

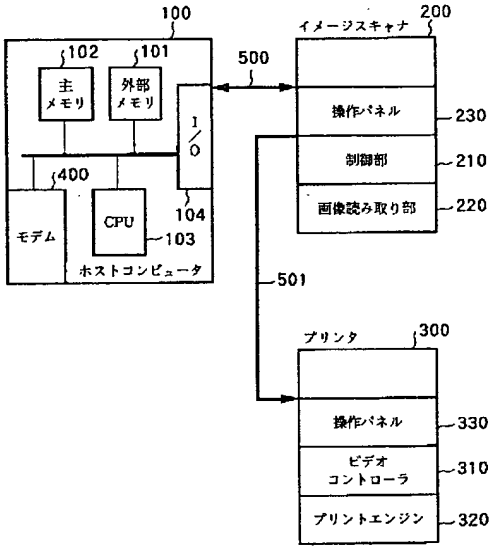
９

１００　ホストコンピュータ
２００　イメージスキャナ
２１０　制御部
２１１　ホストＩ／Ｆ
２１２　ＣＰＵ
２１３　ＲＯＭ
２１４　ＲＡＭ
２１５　イメージメモリ
２１６　プリンタＩ／Ｆ
２１７　画像読み取り部Ｉ／Ｆ
２２０　画像読み取り部
２３０　操作パネル
３００　プリンタ

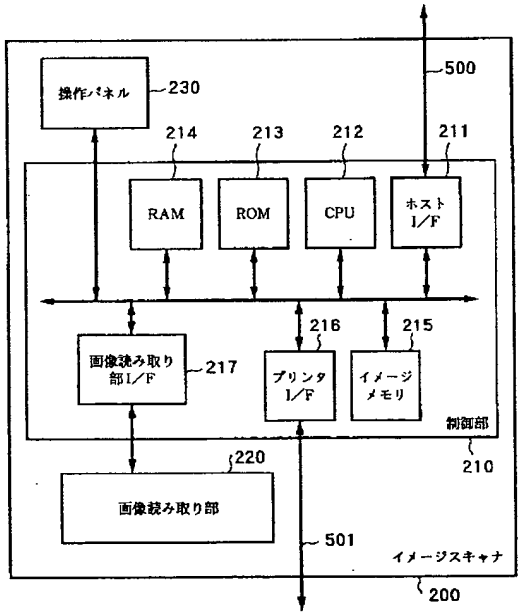
１０

３１０　ビデオコントローラ
３１１　スキャナＩ／Ｆ
３１２　ＣＰＵ
３１３　ＲＯＭ
３１４　ＲＡＭ
３１５　ページメモリ
３１６　イメージメモリ
３１７　エンジンＩ／Ｆ
３２０　プリンタエンジン
３３０　操作パネル
４００　モデム
５００，５０１　信号線

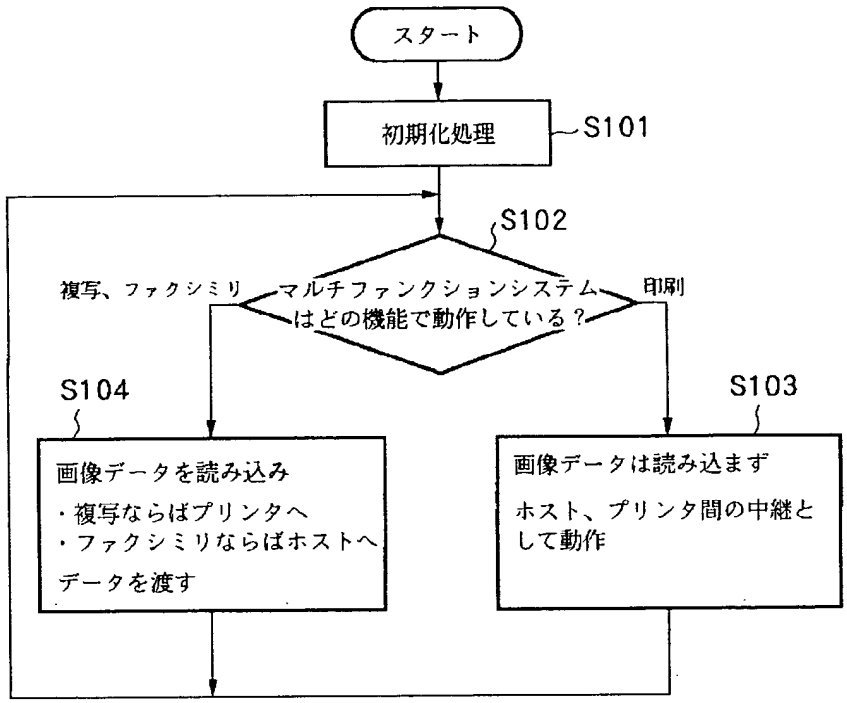
【図１】



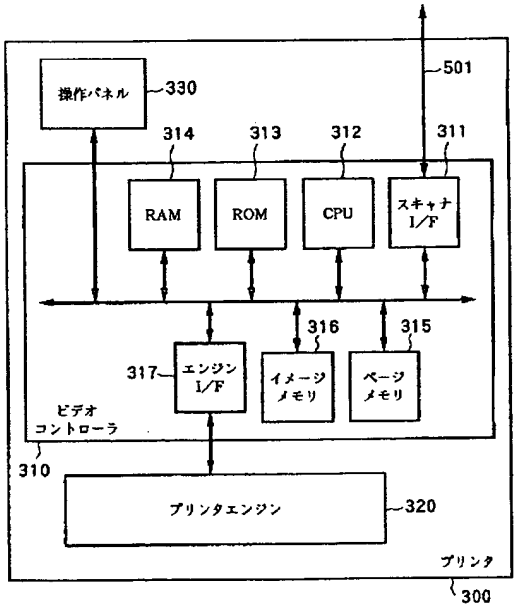
【図２】



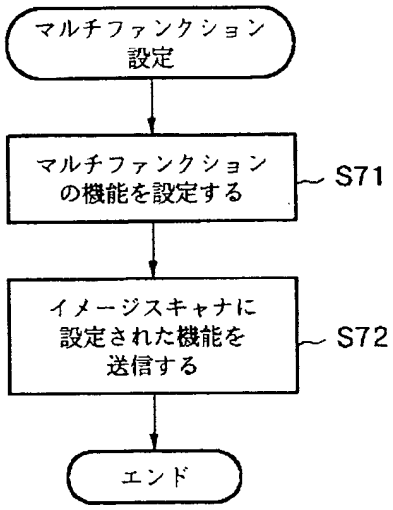
【図3】


スタート
初期化処理
S101
S102
マルチファンクションシステム
はどの機能で動作している？
複写、ファクシミリ
印刷
S104
S103
画像データを読み込み
・複写ならばプリンタへ
・ファクシミリならばホストへ
データを渡す
画像データは読み込まず
ホスト、プリンタ間の中継として動作

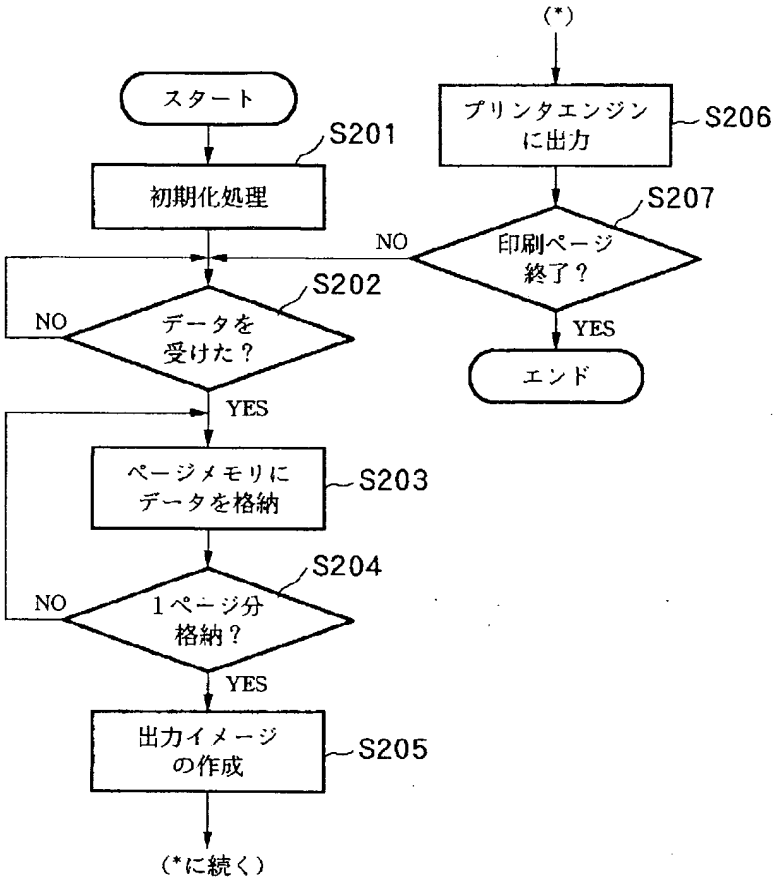
【図4】


501
操作パネル
330
314
313
312
311
RAM
ROM
CPU
スキャナ I/F
316
315
317
エンジン I/F
イメージメモリ
ページメモリ
ビデオコントローラ
310
プリンタエンジン
320
プリンタ
300

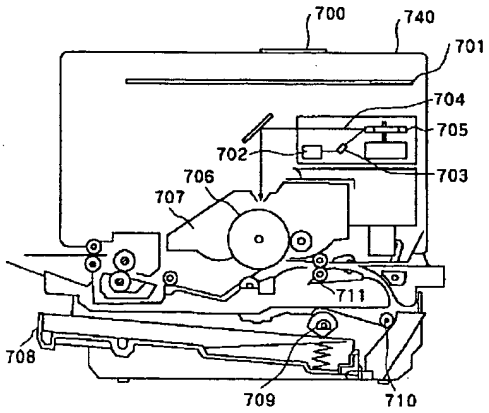
【図7】


マルチファンクション設定
マルチファンクションの機能を設定する
S71
イメージスキャナに設定された機能を送信する
S72
エンド

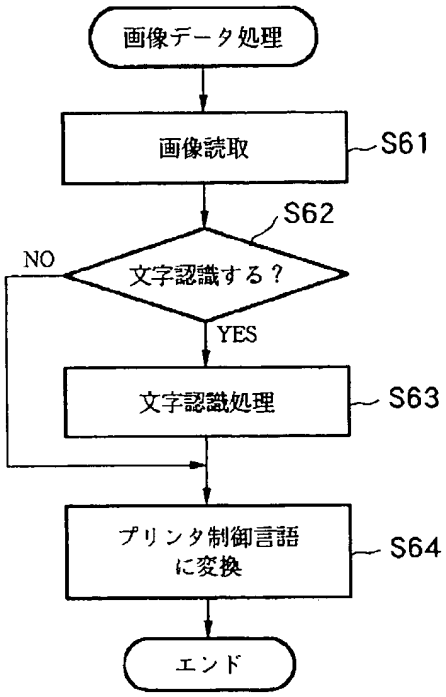
【図５】


(*)
スタート
S201
初期化処理
S202
NO
データを受けた？
YES
ページメモリにデータを格納
S203
S204
NO
1ページ分格納？
YES
出力イメージの作成
S205
(*に続く)
プリンタエンジンに出力
S206
S207
印刷ページ終了？
NO
YES
エンド

【図８】


700
740
701
704
705
702
703
706
707
711
708
709
710

【図6】



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